ILLINIOIS STATE TOLL HIGHWAY AUTHORITY

VALUE PRICING PILOT PROJECT

INTRODUCTION

The Illinois State Toll Highway Authority's (ISTHA, Tollway, Authority) system has been serving important components of travel in and around the greater Chicago area since it first opened in 1958. The Tollway has entered its fourth decade of operation. The character and magnitude of its patronage have evolved in-step with the growth, which has taken place in the region served.

When first opened, the Tollway passed through areas that were largely rural or on the fringe of urban areas, and it served principally long distance, through traffic movements. With the passage of time, urban development has spread out along the Tollway corridors, and the Tollway has become a major component of the Chicago urban highway network, serving an increasingly higher proportion of passenger cars and commercial vehicles. The system is made up of four major components: the Northwest Tollway, the Tri-State Tollway, the East-West Tollway and the North-South Tollway, as shown in Figure 1. They form approximately 274 miles all of which are designated as part of the Interstate Highway System. Interspersed along the highways are 20 mainline toll plazas and 46 ramp plazas to form a closed, cash barrier toll collection system, intended to preclude toll-free travel.

In 1959, the first full year of operation, fewer than 40 million toll transactions were recorded on the Tollway. In 2000, approximately 760 million transactions were recorded, representing an average of 2,011,583 transactions a day. In 1959, the average trip length on the Tollway system was approximately 28.1 miles, this compares to an average trip length of 16.2 miles recorded in year 2000. The Tollway charges passenger cars tolls equivalent to $0.03 per-mile, and ranks amongst the lowest for comparable urban facilities. The last toll rate change was effected in 1983 and has not kept pace with the changes in the cost of living. In real terms, the toll impedance and its impact to traffic have declined.

Since the mid-nineties, Tollway has focused on addressing congestion problems associated with toll plazas through implementation of the I-PASS electronic toll collection (ETC) system. During peak periods, I-PASS accounts for 20-50 percent of total transactions. As plaza operations improve, the congestion problem has begun to shift to mainline segments and ramps, as user demand continues to grow.

Today, several segments of the Tollway routinely experience peak period congestion. As would be expected, these are in the more urbanized sections of the Tollway. The eastern section of the Northwest Tollway has been selected as a candidate location for a value pricing study.

The Northwest Tollway, also designated as Interstate 90, is a 76-mile expressway facility. The Northwest Tollway originates at the terminus of the Kennedy Expressway interchange with the Tri-State Tollway, northeast of O'Hare Airport. The Tollway follows a northwesterly alignment passing through numerous population and employment centers including Arlington Heights and Schaumburg. The western section of the Tollway begins just west of the Fox River and Illinois 31. North of Elgin, the Tollway passes through Kane, McHenry and Boone counties. The highway then follows a north-south orientation passing east of Rockford continuing to a point just south of the Wisconsin state line.

The Northwest Tollway has seen considerable growth in traffic volumes. In 1970, the estimated daily vehicle miles traveled (VMT) was 1,759,050; this compares with 5,402,466 daily VMT in year 2000 representing a 300 percent increase. Currently, peak traffic congestion is generally observed on specific segments between the Kennedy Expressway (MP 0.0) and Illinois 59 (MP 19.1). Two-way daily traffic volumes in the range of 200,000 vehicles per day are routinely recorded in the eastern sections of the road, which is essentially a six-lane lane section. High peak hour volumes are observed in eastbound and westbound directions in both AM and PM hours reflecting the traditional commuting patterns to downtown Chicago, as well as new commuting patterns to major employment centers such as Schaumburg. During peak periods, approximately 15-miles of the route currently operates at a Level-of-Service (LOS) E/F. By 2020, approximately 25.0 miles will fall below LOS E/F.

Existing transit facilities paralleling the Northwest Tollway corridor include the Metra Union Pacific-Northwest commuter rail line on the north and the Milwaukee District-West commuter rail line on the south. The Chicago Transit Authority provides heavy rail transit service from downtown Chicago to Rosemont, which is located at the eastern end of the corridor. Pace, a suburban bus division of the Regional Transportation Authority, provides service along the Northwest Tollway connecting various commercial locations such as at Schaumburg and Arlington Heights to the Rosemont CTA station.

GOALS OF THE STUDY

The Value Pricing Pilot Project will substantiate or refute the following study goals:

- Provide an economic incentive to shift traffic out of peak travel periods;
- Provide an economic incentive to encourage use of ETC;
- Improve travel times and minimize delays on the Tollway;
- Encourage use of alternative modes

PROJECT PHASES

The overall ISTHA Value Pricing Pilot Project will actually consist of three separate project phases. Phase 1 involves the basic feasibility study and evaluation of value pricing options for the Tollway. This will include extensive market research and

outreach, traffic and socioeconomic impact analysis, identification of alternative pricing strategies, development of preliminary plans and cost estimates, a review of toll technology considerations and more.

The results of most analytical steps in Phase 1 would be documented in a study report, which would be submitted approximately eight months following notice-to-proceed. In addition to documenting study results, it would include recommendations for the pilot project or projects, which should be tested on the Illinois Tollway. Once decisions are reached to proceed with the pilot demonstration, some additional efforts in Phase 1 would also be conducted, such as a Phase 2 scope of work, including monitoring and evaluation procedures.

Phase 2 would involve the actual implementation of the pilot program, beginning about one year after the overall study process begins. The consultant team would be heavily involved in the monitoring and evaluation of actual impacts associated with implementation of the value pricing pilot program(s), including traffic and revenue impacts, improvements in operating conditions and determining if certain program refinements would improve the effectiveness of the value pricing strategies. One of the most important elements of Phase 2 is the implementation of various marketing strategies to enhance the effectiveness of the value pricing strategies, both in terms of demand management and in encouraging use of I-PASS.

Phase 2 would also last approximately one year. At the conclusion of this phase another study report would be submitted, documenting results of the effectiveness of the pilot demonstration program. Based on the results of the one-year demonstration, decisions would be reached by the Authority regarding final implementation of one or more of the pricing strategies. If a decision were made to go forward, Phase 3 would involve the final implementation phase of the value pricing program on designated Tollway facilities.

PROJECT STUDY SECTIONS

Based on preliminary study planning, the study limits on the Northwest Tollway, I-90 would be from the Kennedy Expressway (MP 0.0) to Randall Road (MP 26.5).

However, it is noted that the Tollway system has several other congested segments carrying high peak period commuting volumes, such as the East-West Tollway (I-88) and the North-South Tollway (I-355). These other segments could also be candidate corridors for study; a specific pilot corridor would be established prior to commencement of the study based on the optimum balance of congestion conditions, ease of Phase 2 demonstration, transit alternatives and other factors. Figure 1 presents the location of these corridors.

PHASE 1 TASKS

Phase 1 work program would include the following 8 tasks:

- Task 1: Baseline Traffic and Operating Conditions;
- Task 2: Identification of Pricing Strategy Options and Screening Analysis;

- Task 3: Market Research Surveys and Studies;
- Task 4: Variable Pricing Program Options and Impact Estimates;
- Task 5: Evaluation of the Toll Collection System Capability to Accommodate Variable Pricing;
- Task 6: Capital and Operating Cost Estimates;
- Task 7: Study Report, Including Recommended Pilot Projects;
- Task 8: Development of Work Scope and Evaluation Plan for Phase 2

TASK 1: BASELINE TRAFFIC AND OPERATING CONDITIONS

The purpose of this task will be to establish baseline traffic and operating conditions profiled for the Tollway, and competitive facilities, prior to implementation of value pricing. This will include conduct of origin-destination studies at select toll plazas, traffic counts on the Tollway and parallel arterial routes, delay and queuing characteristics of the toll plazas, as well as travel time and congestion studies on the Tollway mainline sections themselves.

The primary objective of these surveys would be to obtain a 'real world' measure of observed travel patterns and characteristics. Motorists would be requested to provide trip information with respect to origin, destination, purpose, frequency, vehicle occupancy, payment mode, vehicle class and time of travel.

Extensive travel time speed and delay studies would be conducted during both peak and off-peak periods on the Tollway and principle off-Tollway facilities. Multiple speed-delay runs would be conducted in each travel direction on all sections of the Tollway in the value pricing study area. In addition, travel time runs would be made during shoulder hours and off-peak hours, to obtain a clear operating profile of existing traffic operations.

In addition to traffic counts on the Tollway itself, available counts would be obtained on non-Tollway facilities as well to provide a baseline against which future traffic impacts of value pricing can be measured. It is possible that some value pricing strategies may result in diversions to alternative routes. Off-Tollway impact assessments would be limited to major arterials paralleling the Tollway.

TASK 2: IDENTIFICATION OF PRICING STRATEGY OPTIONS AND SCREENING ANALYSIS

In this task, a wide range of potential pricing options would be identified and subject to initial screening. Typical options might include variations in:

- Peak period surcharge levels;
- Cars vs. trucks vs. all vehicles;
- Pricing differentials between cash and I-PASS;
- Period of deployment (e.g. 2 hour peaks vs. 3-hour peaks); and / or
- Cash vs. I-PASS Only;
- Dynamic Pricing;
- HOV discounts

Other strategic options could also be considered, such as possible pricing strategies targeted specifically to encourage shifts to transit, such as coordinated fares, integrated electronic pricing mechanisms or other ideas. Consideration could also be

given to the general viability of methods for dealing with potential income or other equity concerns, such as accumulation of transit credits.

One early screening criteria would be the permissibility of potential pricing strategies under terms of the existing Trust Indenture covenants, enabling legislation and other legal constraints. Other criteria would include:

- Potential for achieving stated goals and objectives;
- Obvious technology or operations concerns or limitations;
- Consistency with regional transportation systems and plans

The task would conclude with a shortlist of up to 5 pricing strategies to be subjected to detailed analysis in Task 4 below. Issues, which could benefit from further research in focus groups or other outreach efforts, would also be identified.

TASK 3: MARKET RESEARCH SURVEYS AND STUDIES

The primary objective of any pricing strategy, such as value pricing, is to influence motorist behavior, be that travel time or payment mode preference. Critical to estimating traffic and revenue impacts of pricing strategies is market research aimed at determining motorists' willingness, and ability, to shift travel time or other potential responses which might be expected in response to the pricing strategy.

Task 3 will include a range of market research efforts, the most significant of which will be a stated preference survey specifically designed to estimate motorists' behavior. This task will also include focus group and other surveys of employers, trucking companies and others to aide in establishing the demand management elasticities, which will be used in the traffic and revenue impact analysis.

- Conduct Customer Focus Groups - Customer focus groups will be used to determine likely reactions to value pricing alternatives and to test marketing/communications tactics. The focus groups are intended to cover both commercial and noncommercial customers for the study corridor.

- Stated Preference Survey – Computer based surveys of a sample of existing passenger car Tollway users designed to assess willingness and ability to shift travel time and other behavioral responses to various potential pricing strategies. The output of the surveys would include information on value of time, shift potential, including shifts in time or to other modes and potential responsiveness to possible incentives.

- Survey Trucking Managers -The objective of this task is to determine whether shipments would be rescheduled to avoid higher tolls during peak periods. Either a focus-groups approach could be used to accomplish this objective, or structured phone interviews.

- Stakeholder Interviews - A series of interviews would be held with leaders representing a broad base of opinion in the corridor.

    - Local and state government elected and agency officials;
    - Community and business leaders;
    - Commuter groups ;
    - Commercial vehicle managers;
    - Those identified in completed interviews as people we should also be speaking with

TASK 4: VARIABLE PRICING PROGRAM OPTIONS AND IMPACT ESTIMATES

The primary value pricing impact analyses in the Phase 1 study will be conducted in Task 4.

The impacts to be evaluated with respect to each of the toll pricing options include:

- Potential traffic impacts including:
    - Time shifts
    - Diversion from the Tollway
    - Shifts to transit
- Traffic operational impacts including safety, delays and congestions, on the Tollway mainline, at toll plazas and at key off-Tollway locations;
- The preliminary assessment of potential revenue impacts;
- Preliminary estimated net revenue impacts;
- General socioeconomic issues and environmental considerations, if any

Traffic impacts would be analyzed in peak periods and off-peak periods, to determine if traffic shifts would make conditions worse in shoulder hours than peak hours. Toll plaza operations impacts would be evaluated using toll operation simulation programs or similar tools.

TASK 5: EVALUATION OF THE TOLL COLLECTION SYSTEM CAPABILITY TO ACCOMMODATE VARIABLE PRICING

The implementation of variable pricing can present unique challenges for a toll collection system. If the variable pricing at the time of day-based variable pricing is limited only to electronic toll customers, technology issues should be relatively limited. Toll rates and electronic toll collection can be handled by computer at the

transaction level with little direct impact at the toll plaza itself. It may require implementation of dynamic message signing (DMS), however, it will alert motorists of the current rate levels in affect.

The Consultant will provide recommendations to staff regarding potential modifications, hardware or software, which might be needed to accommodate variable pricing. This would include:

- Potential audit issues, particularly if variable tolls are provided for cash and electronic customers;
- DMS requirements and other hardware changes a the plaza levels to advise motorists of toll rates currently in effect

TASK 6: CAPITAL AND OPERATING COST ESTIMATES

This task will involve the preparation of cost estimates related to implementing the variable pricing scenarios on the Illinois Tollway. This would include, but not necessarily be limited to:

- Required civil work at the toll plazas, such as signing or striping;
- Required equipment changes, such as DMS at either toll plazas or on the Tollway mainline;
- Required changes to the ETC and/or toll collection systems;
- Potential impacts on operating costs, particularly toll operations, as a result of the pricing strategies

TASK 7: STUDY REPORT, INCLUDING RECOMMENDED PILOT PROJECTS

Task 7 will include development of draft and final study reports, which will fully document the Phase 1 efforts conducted in Tasks 1 through 6. In addition to discussing the various pricing alternatives and analytical methodology, the report will fully document the results of the evaluation of the various scenarios. This will include appropriate comparative evaluation matrices and the overall approach used in determining the preferred alternative(s).

The report will also include recommendations as to the number and nature of the pilot project or projects to be suggested for implementation during Phase 2. For each recommended pilot project, the report will include, the following:

- The cost of implementation and operation;
- Estimated traffic and revenue impacts;
- Estimated operational impacts and considerations;
- Estimated socioeconomic and environmental impacts for consideration;
- Required modifications for the toll collection system

TASK 8: DEVELOPMENT OF WORK SCOPE AND EVALUATION PLAN FOR PHASE 2

In this task, a specific scope of work for the recommended and approved Pilot Project would be developed. The scope of work would include an estimate of all costs, including both capital and operating costs associated with each of the pilot projects.

A monitoring and evaluation plan for Phase 2 would be developed, including measures such as:

- Traffic impacts at toll plazas and on the Tollway mainline, both in terms of total daily traffic changes as well as shifts in time of travel from peak to off-peak conditions;
- Traffic impacts on alternative routes, both by time of day and, in the case of possible diversions, on a daily basis;
- Observations regarding changes in operating characteristics at toll plazas;
- Surveys or other techniques aimed at determining potential socioeconomic impacts, and identification of any equity issues;
- A quantification of the net benefits to Tollway patrons and Tollway operations of the Phase 2 pilot implementation program(s), by comparing conditions before and after implementation of the pricing strategy

PHASE 2: PILOT PROJECT DEPLOYMENT

Phase 2 of the project would proceed only after review of the Phase 1 study results and approval of the Authority. It is assumed that a separate application for the Federal Highway Administration (FHWA) participation would be submitted once decisions were made to proceed with the actual pilot program demonstration phase itself.

If authorized, Phase 2 would involve final planning an actual deployment of the pilot project. It would include development of a detailed marketing plan, recognizing the importance of proper communication to users and the public if the program is to be successful. This may also include a budget for promotional costs, such as advertising and other communications materials.

Once deployed, it is envisioned that the trial operation would continue up to one year. During this time, actual traffic, revenue and operational impacts would be carefully monitored. At the conclusion of the one year trial, the Authority would decide whether or not to proceed with the permanent deployment of value pricing over the entire Tollway system, just in selected corridors, or not at all.

PROPOSED STUDY BUDGET

A proposed study budget has been developed by major task for the Phase 1 work program. A budget for Phase 2 would be prepared after a decision is made by the Authority to proceed with the Pilot Program. This would depend largely on the cost estimates of the pilot project developed during the Phase 1 study.

Funds from the Value Pricing Grant will be used to defray the ISTHA cost to study, plan and implement the Value Pricing Pilot Project.

The Transportation Equity Act for the 21st Century (TEA-21) Value Pricing Program is expected to cover 80 percent of eligible project costs. ISTHA will provide the remaining 20 percent of costs. ISTHA will invoice IDOT and FHWA monthly for incurred and eligible project costs.

Budget estimates for Phase 1 include:

Task	Proposed Budget	Estimated Duration
1. Baseline Traffic and Operating Conditions	$150,000	4-Months
2. Pricing Strategy Options and Screening	25,000	1-Month
3. Market Research Surveys / Studies	200,000	4-Months
4. Variable Pricing Impact Analysis	100,000	4-Months
5. Toll Collection System Analysis	25,000	1.5-Months
6. Capital and Operating Cost Estimates	25,000	1-Month
7. Study Report and Pilot Recommendations	50,000	2-Month
8. Develop Scope and Evaluate Phase 2	25,000	1-Month
Phase 1 Total Budget	$600,000	12-Months

PROCUREMENT AND USE OF CONSULTANT TEAM

The Illinois State Toll Highway Authority selected Wilbur Smith Associates as the Traffic Engineer Consultant. ISTHA issued Requests for Qualifications (RFQ) and two eligible firms responded to the RFQ. ISTHA's Evaluation Committee, which consisted of twelve members, reviewed, evaluated and scored each Statement of Qualifications. Each firm then held oral presentations. ISTHA's Selection Committee, which consisted of seven members, voted and determined the final Consultant Selection.

INTERAGENCY/REIMBURSEMENT AGREEMENTS

ISTHA will coordinate and execute the necessary agreements with the Illinois Department of Transportation (IDOT). ISTHA is governed by a Board of Directors and is an independent entity from IDOT.

STATEWIDE PLANNING – The Tollway system is located in the northern portion of Illinois. The 274-mile system serves eleven counties in northern Illinois. The proposed value pricing pilot program will be submitted to the Chicago Area Transportation Study (CATS) for inclusion in the Transportation Improvement Program.

COORDINATION WITH THE METROPOLITAN PLANNING ORGANIZATION (MPO) – In the Policy Committee meeting of CATS held on October 31, 2002, ISTHA presented its plan to submit this application. CATS as the MPO is very supportive of the plan and a letter of support will follow.